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Reclaimed Wastewater for Drinking: Safe but Still a Tough Sell

A new report highlights advancements in reclamation technology and predicts growth in treatment programs.



Mechanic Jimmy Pennella uses a flashlight and a needle to stop fibers in membranes from leaking at the Groundwater Replenishing System in Orange County Water District in Fountain Valley, California.

Photograph by Ann Johansson, Corbis

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Water filtration technology has advanced to the point where wastewater can be rendered safe for drinking, according to a new report, but legislative and psychological hurdles will need to be overcome before widespread adoption can happen.

"Expanding water reuse could significantly increase the nation's water resource, particularly in coastal communities," said Rhodes Trussell, president of Trussell Technologies in Pasadena, California, and chair of the committee that wrote the report.

Treated wastewater, also known as reclaimed water, is commonly used for irrigation and industry. And many towns already rely on reused water simply because they draw water downstream from other municipalities' wastewater release pipes.

"De facto reuse takes place throughout the country," Trussell said.

But getting the public to knowingly drink treated wastewater has been a tough sell.

(Related: "Raiding the Bread Basket: Use and Abuse of the Mississippi River Basin")

New Report Underscores Safety

A new report by the National Research Council (NRC) that reviewed current wastewater treatment technologies found that the possible health risks associated with exposure to chemical contaminants are minimal.

"Available technology can reduce chemical and microbial contaminants to levels comparable to or lower than those present in many current drinking water supplies," Trussell said.

Trussell and the other NRC report authors say the government could do much to help increase public confidence in wastewater treatment programs for drinking—also known as potable use—and help to provide a consistent minimum level of protection across the nation. Many of these goals could be met by toughening federal regulations, they add.

"For example," Trussell said, "under the Clean Water Act, the pretreatment regulations, which have made tremendous strides to reduce toxics in the nation's wastewater since they were first implemented, could be updated to more aggressively pursue organic contaminants that were not identified on the original 1977 list." In other words, by updating the standards in keeping with current knowledge, consumers can feel more confident that the water is truly safe.

Another challenge is that water reuse regulations can vary widely by location. "In most coastal communities, municipal wastewater belongs to the wastewater utility and retaining it for reuse is fairly easy," Trussell explained. "In many inland communities that water already [legally] belongs to a downstream user."

But perhaps the biggest hurdle that will need to be overcome before the public will accept drinking recycled wastewater is not technological or legislative, but psychological.

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Getting Used to the Idea

"The psychological side is often what's critical," said Paul Rozin, a psychologist at the University of Pennsylvania. Rozin appears in the upcoming documentary *Last Call at the Oasis*, which investigates several aspects of the looming global water crisis.

Most people have a deep revulsion to the idea of drinking reclaimed water, explained Rozin. "The revulsion comes from its closeness to sewage," he said. "For tap water or bottled water, people tend not to think where it comes from. But for recycled water, they do." (This despite the fact that many people already drink water drawn downstream from wastewater operations.)

One way to overcome this revulsion is to provide some mental separation between the recycled water and its source. In *Last Call at the Oasis*, for example, the filmmakers try selling treated water under the catchy product name of "Porcelain Springs" and enlist comedy actor Jack Black to vouch for its drinkability.

Another possibility, Rozin said, is to follow the example set by Singapore. "They're switching over to recycled water and they're doing it gradually and also giving people an economic advantage to switch," he said.

"First, they take recycled water and pump it into the ground so they don't go directly from recycled water to drinking. And they will also provide the water at any catered event [for free]."

One example of a successful wastewater-recycling program is the Groundwater Replenishment System in Orange County, California, Trussell said. There, wastewater is treated to a level exceeding state and federal drinking standards and is then released into local groundwater recharge basins, where it will eventually be re-drawn for municipal or private use. Previously, treated wastewater was simply discharged into the Pacific Ocean. But the new process should help extend the life of the aquifers, and it may make the idea of reclaimed water more appealing than more direct recycling, since the water receives additional filtering in the ground.

"This project just broke ground for expansion from 70 to 100 million gallons per day," Trussell said.

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The Groundwater Replenishment System and other programs across the United States provide reasons to be optimistic about the future of wastewater treatment programs, Trussell said. "Increasingly, projects are being conducted in the open and have successfully garnered public support," he added.

In general, Penn's Rozin said, people often greatly underestimate their ability to adapt to new things, including drinking treated water.

"There's no doubt that people can get used to it," he said. "It's just a matter of getting them there."

But while wastewater recycling could contribute significantly to the nation's available freshwater, it will not in itself solve all the water problems that we will face in the coming decades.

"Our estimate is that reuse of all the wastewater we discharge to the oceans and estuaries would increase the water available to U.S. municipalities by about 6 percent," he added. "Significant, but not a panacea."

In other words, reclaiming our wastewater can be one step toward reducing the amount of freshwater we use, but it cannot solve all our problems. It may help decrease pressure on our overtapped aquifers and rivers, but we still have to improve water management and protection on a global scale.

(Related: "Sewer Mining: Efficient Water Recycling Coming to a Community Near You")

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